BONNER

December 15, 1948.

Dear Dave,

Your cultures all finally got here. Thanks very much.

I'm glad to hear that "ONPG" is working well for you. I've been studying the coli K-12 enzyme in more detail, with some very peculiar findings. The metal ions combine with the enzyme, and the major effect is not on the %activity of the enzyme, as determined at infinite substrate concentration, but on the K_s; in a formal way, the alkali metal ions "compete" with the substrate, as well as with each other. This does not necessarily mean that they do absorb to the same sites on the enzyme molecule, but they alter the affinity of the enzyme for the substrate in the same way that a competitive inhibitor does (i.e. by increasing the slope of the 1/s term when 1/v is plotted against 1/s). Lactose competes in accord with the Lineweaver-Burk formulation; in M/50 Na phosphate buffer, the K_s is 1.3×10^{-4}; K_I (lactose) is about ten times higher. Do you have some preparations with which the Neurospora enzyme could be compared to the coli in these respects?

According to a grapevine, you've gotten several more lactose-negative mutants. Have you worked out a selective method?

Sincerely,